

Risk analysis of adolescent sexual activity in college Surabaya, Indonesia: cross-sectional study

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ABSTRACT

Adolescence is characterized by active sexual hormones that can lead to sexual urges with the opposite sex. These urges, in turn, may trigger risky sexual behavior. College students, in a transitional period from adolescence to early adulthood, exhibit diversity in addressing sexual activity. This research aimed to analyze the risks associated with adolescent sexual activity in a college in Surabaya, Indonesia. The study utilizes a cross-sectional design with accidental sampling of active students aged 18-24 years. The total number of participants in this study was 221 people who filled out a questionnaire in the form of a Google Form, distributed through social media. The results show that, among all the factors identified, dating status has a significant relationship with PR 11.688 (95%CI 5.048-27.061) in engaging in risky sexual activities among adolescents. Reproductive health education at the university level is needed to reduce risky sexual activities among students.

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1. INTRODUCTION

Adolescence is a period characterized by physical and emotional changes, including the activation of sexual hormones that lead to an interest in the opposite sex and the emergence of sexual urges. During adolescence, sexual behavior can vary from sexual abstinence, and sexual fantasies, to physical interactions such as touching and kissing, as well as acts involving the genitals. In addition to physical changes, adolescents also experience emotional changes that can affect their behavior and health [1]. Among the types of sexual behavior mentioned, vaginal intercourse is the sexual conduct that poses the most adverse risk to adolescents. Additionally, there is also a risk of low academic achievement [2], risky sexual behavior, substance abuse, and antisocial behavior in adulthood [3]. The two biggest dangers are contracting a sexually transmitted illness and becoming pregnant against your will [4].

Sexually transmitted infections (STIs) remain a global public health problem. According to estimates from the Centers for Disease Control and Prevention (CDC), over half of the 26 million new cases of sexually transmitted diseases that occurred in the US in 2018 were among teenagers between the ages of

15 and 24 [5]. The risk for 15-19 year olds is often associated with behaviors, such as alcohol use and unsafe sex [1]. Research conducted in Indonesia in 2015 showed that 58.2% of adolescents aged 15-19 years had engaged in sexual intercourse [6]. Another study found that the percentage of high school students who had engaged in sexual intercourse was 7.7% in 2012 and increased to 9% in 2018 [7]. Surabaya is the second-largest metropolitan city in Indonesia, located in East Java. Data on the spread of human immunodeficiency virus (HIV) in 2021 ranks Surabaya as the third-largest in East Java among the age group 15-19 years, with a proportion of 7.9% (10 out of 126 cases). Meanwhile, the age group 20 - 24 years ranks first with a proportion of 15.4% (107 out of 696 cases) [8]. Surabaya boasts the largest number of universities in East Java. In 2020, there were 6 state universities and 70 private universities with a total of 257,630 students. Students, in their transition period from adolescence to early adulthood, naturally exhibit diversity in addressing sexual activity. The social environment is highly open and dynamic in the age of globalization, with lifestyle changes being a significant contributing factor. The combination of typical adolescent development with a dynamic social and cultural environment presents challenges. One of the external factors closely influencing adolescents is the internet [9]. Research results indicate that adolescents who use social media tend to engage in risky sexual activities [10].

In response to the prevalent cases of sexual violence in the university environment, there is a gap in rules specifically addressing sexual violence in higher education, contributing to the high rate of sexual violence on campuses. The Minister of Education and Culture Regulation on Research, Technology, and Higher Education Number 30 of 2021, addressing the handling and prevention of sexual assault in university settings, was released by the Ministry of Education and Culture [11]. It is believed that one of the most crucial ways to combat sexual assault is to raise awareness of what sexual consent entails. Teenage reproductive health faces challenges, with risky sexual behavior, leading to various reproductive system issues [12]. This research aimed to analyze the risks associated with the sexual activity of adolescents in Surabaya universities. The study contributes to the accomplishment of the third sustainable development goal (SDG) of 2030, which aims to lower maternal and newborn mortality resulting from teenagers having risky sexual experiences.

2. METHOD

This study employs an observational methodology, a cross-sectional study design, and a quantitative technique. It was conducted in July-August 2023 at Surabaya City College, Indonesia. The target population included all adolescents attending colleges in Surabaya City. The sample was selected through accidental sampling within this population group. Inclusion criteria required students to be enrolled at Surabaya city colleges and to have engaged in sexual activity. The sample size was determined using the Slovin formula based on the population (N) of 273,229 (the number of students in Surabaya Universities) resulting in a calculated sample size of 100 participants with a 10% margin of error.

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

The instrument used in this study has undergone validity and reliability tests to ensure accurate and precise data. Validity was assessed using Pearson's correlation, and the questions in this instrument met the test requirements, with a value above 0.210 (Asyg. 2-tailed). The reliability of this instrument is moderate, as indicated by a Cronbach's alpha value of 0.512. Data collection was conducted using an online platform, specifically Google Forms, distributed via social media platforms such as WhatsApp, Instagram, and Twitter. The collected data from samples include measurements of independent variables including age, gender, residence (categorized as living alone in a boarding house, contract, dormitory, or living with parents), parents' income (less than 6 million and more than or equal to 6 million), social media use (considered negative if the duration is exceeds four hours, very frequent usage, accessing pornographic content, seeking pleasure or spending excessive time and positive usage), relationship status (dating or ever dating and never dating), age of first sexual activity (10-19 years and 20-24 years), sexual consent (none and present), sexually transmitted infections criteria (symptomatic and asymptomatic). The dependent variable is sexual activity, categorized into a high-risk category encompassing activities such as kissing lips, kissing necks, hugging, groping breasts, and genitals, rubbing genitals, and sexual intercourse. Additionally, there is a mild category of sexual activity, including holding hands and kissing foreheads/cheeks.

Determination of the sample involved selecting respondents who happened to be present or available and met the research requirements. Every respondent who completed the questionnaire in full and satisfied the inclusion criteria was included as a research sample. Bivariate analysis was employed to create a cross table (contingency table) illustrating the connection between the independent and dependent variables. The level of risk was assessed by examining the prevalence ratio (PR) with a 95% confidence interval. This

study adhered to the principles of research ethics, including respect through informed consent, and obtained ethical approval from the Ethics Commission of the Faculty of Public Health, Airlangga University with ethical number 143/EA/KEPK/2023.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Characteristics of respondents

Table 1 shows the characteristics of university students. The majority of students engaged in sexual activity fell within the high-risk category. They participate in activities such as kissing lips, kissing neck, hugging, groping breasts and genitals, rubbing genitals, and sexual intercourse (63.8%).

3.1.2. Risk factors for risky sexual activity

Behavioral related to student sexual activity, as shown in Table 2, include holding hands, kissing foreheads and cheeks, hugging, kissing lips, kissing necks, groping breasts, and genitals, rubbing genitals, and sexual intercourse. Consequently, based on the table, it can be concluded that dating status holds a significant relationship with the prevalence ratio (PR) of 11.688 which is at the 95% confidence interval (CI) of 5.048 to 27.061. This implies that the respondents' dating status is more likely to engage in heavy sexual activity.

Table 1. Characteristics of university adolescents in Surabaya City

Characteristic		n	%
Age	10-19 years	41	18.6
	20-24 years	180	81.4
Gender	Male	41	18.6
	Female	180	81.4
Place of residence	Live alone	115	52.0
	Living with parents	106	48.0
Revenue	<6 million	140	63.3
	≥6 million	81	36.7
Use of social media	Negative	205	92.8
	Positive	16	7.2
Age of first sexual activity	10-19 years	177	80.1
	20-24 years	44	19.9
Sexual consent	No consent	13	5.9
	Having consent	208	94.1
STI criteria	Symptomatic	82	37.1
	Asymptomatic	139	62.9
Relationship status	Dating/been dating	181	81.9
	Never dated	40	18.1
Sexual activity	Weight	141	63.8
	Lightweight	80	36.2

Table 2. Risk of sexual activity in college adolescents

Characteristic		Sexual Activity		PR (95% CI)
		Weight n (%)	Lightweight n (%)	
Age	10-19 years	24 (57.1)	18 (42.9)	0.700 (0.354-1.386)
	20-24 years	120 (65.6)	63 (34.4)	
Gender	Male	31 (70.5)	13 (29.5)	1.435 (0.703-2.931)
	Female	113 (62.4)	68 (37.6)	
Place of residence	Live alone	75 (63.6)	43 (36.4)	0.961 (0.557-1.657)
	Living with parents	69 (64.5)	38 (35.5)	
Parents' income	<6 million	90 (62.9)	53 (37.1)	0.881 (0.499-1.555)
	≥6 million	54 (65.9)	28 (34.1)	
Use of social media	Negative	134 (64.4)	74 (35.6)	1.268 (0.463-3.469)
	Positive	10 (58.8)	7 (41.2)	
Age of first sexual activity	10-19 years	116 (64.4)	64 (35.6)	1.100 (0.560-2.162)
	20-24 years	28 (62.2)	17 (37.8)	
Sexual consent	No consent	8 (61.5)	5 (38.5)	0.894 (0.283-2.830)
	Having consent	136 (64.2)	76 (35.8)	
STI criteria	Symptomatic	55 (65.5)	29 (34.5)	1.108 (0.630-1.950)
	Asymptomatic	89 (63.1)	52 (36.9)	
Relationship status	Dating/been dating	136 (73.9)	48 (26.1)	11.688 (5.048–27.061)*
	Never dated	8 (19.5)	33 (80.5)	

3.1.3. Spatial analysis

This study utilized data collected from 221 active students aged 18-24 years old studying at universities in Surabaya. Figure 1 illustrates the distribution of the number of sexual activity cases by respondents based on the location of their college campuses. The light purple color in the West and South Surabaya areas indicates a range of 1-100 cases, whereas the dark purple color, in East Surabaya, represented cases ranging from 100-200.

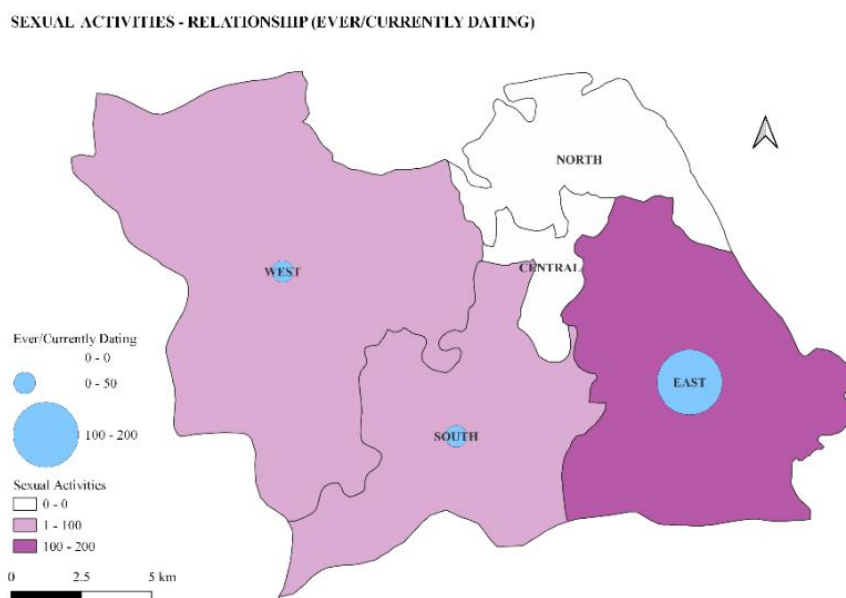


Figure 1. Spatial analysis of dating status on sexual activity of university students in Surabaya Region, Indonesia

3.2. Discussion

The findings of this study indicate that teenagers who are in a relationship or have ever been dating are more likely to engage in high-risk sexual activities. Thus, it may be concluded that when students form connections with individuals of the opposite sex, they are more prone to engaging in harmful behaviors. Adolescence is a period marked by intense intellectual, psychological, and physical development. During this time, teenagers may develop characteristics such as intense curiosity, a passion for adventure, and a readiness to take on challenges. However, teenagers who have access to means of satisfying their desire may experience internal struggles. Making poor judgments can lead to risky behavior among teenagers, such as engaging in unsafe sexual activity. Adolescents engaging in such behavior may experience both physical and psychological consequences [13]. Adolescents are more susceptible than other age groups to partake in high-risk sexual practices, such as unprotected intercourse or changing partners [13]. As puberty progresses, with increased androgen production and the development of secondary sexual traits, sexuality begins to manifest. This period is marked by a rise in affective-sexual behaviors, potentially arousing sexual desire and stimulating romantic and erotic experiences [11]. This can result in increased sexual activity, taking forms such as self-eroticism or sexual initiation. In this study, various sexual behaviors including holding hands, embracing, kissing lips and cheeks, and engaging in intimate activities were observed [13]. Among students engaging in frequent sexual activities, 63.8% reached the point of engaging in sexual behavior. This finding aligns with research from the University of Michigan, which reported a similar figure of 63% [14]. However, it contrasts with studies showing a lower prevalence of 41.6% among college students in Ethiopia [15] and only 38.6% among students from two Nigerian Universities [16]. Discrepancies in risk education, information delivery to students, and variations in urban environments, including leisure places, may contribute to these differences, along with potential social and cultural distinctions.

A significant majority of respondents (64.4%) reported having their first sexual experience between the ages of 10 and 19. This contrasts with Croatian university students, among whom the majority had their first sexual experience between the ages of 16 and 18 [17]. The risk of frequent sexual activity appears higher among Generation Z students born between 1995-2015, placing them in the age range of 8-28 years old [18]. The younger age of individuals can impact emotional control processes and the formation of aggressive

behavior. Adolescents sensitive to new ideas may exhibit deviant behavior [18]. The age of first sexual activity, increasingly occurring at a young age, reflects emotional instability impacting decision-making on risky behaviors. Despite these conditions, the alarming incidence of sexual violence, particularly targeting adolescents or children, cannot be taken lightly. Reports indicate a rise in complaints of sexual violence against children, reaching 4,596 cases for approximately three months in 2020 [19]. At an early age, children are exposed to sexual knowledge to enable them to protect themselves from sexual crimes, however, in reality, this effort is thwarted by the compromised morality of sex offenders [20]. Victims who experience psychological impact at a young age often exhibit low self-confidence and a lack of self-esteem. If victims do not receive appropriate psychological treatment, promptly, it is not surprising that the future sexual behavior becomes increasingly uncontrollable. Thus, sexual activity during adolescence cannot be divorced from a series of interventions regarding sexual knowledge since childhood.

Addressing the phenomenon of sexual activity in adolescence, this research found that 62.4% of the girls studied were sexually active in the heavy category. However, no meaningful connection was found between sexual activity and gender. When considering gender roles in sexual activity, the factor of self-esteem is deemed to have an influence. In the case of adolescent boys with high self-esteem, there is a tendency for their relationships to be directly proportional to their sexual activity. A study confirms that the intention to delay premarital sexual intercourse in men is still categorized as low compared to female adolescents [21]. The patriarchal culture, which views men as the holders of power and control over women, seems to be still deeply impregnated in some segments of our society [22]. Gender equality has not yet been fully realized, as campaigns advocating for the rights and opportunities of women, especially regarding sexuality issues, are still prevalent.

The majority of respondents are students living alone in Surabaya City, including those in boarding houses, rented houses, apartments, dormitories, and other similar accommodations. Another group consists of students who live with their parents at home. The results indicate that students living in boarding houses and engaging in heavy sexual activity accounted for 63.6%, while those engaging in light sexual activity were 36.4%. Respondents living at home with parents and engaging in heavy sexual activity were 64.5%, with 35.5% engaging in light sexual activity. This suggests that no significant difference and respondents living alone are more prone to participating in hazardous sexual behavior. Research conducted by Maria at Vocational High School Ruteng City shows that adolescents living in boarding houses engage in premarital sex at a rate of 78.3%, while those living at home with parents engage in premarital sex at a rate of 13.3% [23]. Another study in Maluku revealed that sexual drive, social demands and living in an unsupervised place are the risks of sexual behavior among teens in boarding houses [24]. This is supported by research on teenagers in Cambodia, which found that living away from home and being unmarried put teenagers at risk of engaging in two premarital sex encounters [25]. The research further states that the absence of parental supervision has a significant impact on their sexual behavior [24].

According to the CNBC Indonesia website, the East Java Provincial government set the minimum salary for 2023 in East Java Province, with Surabaya having the highest at IDR 4,525,479 [26]. This implies a relatively high figure considering the average income of people in Surabaya. Parents' income will influence the parenting and facilities available to adolescents during their growth. In this study, parental income was categorized into two groups: under 6 million and above or equal to 6 million. The results indicate that the majority of respondents' parents have incomes under 6 million. Adolescents with parents earning under 6 million tend to engage in heavy sexual activity at a rate of 62.9%. This suggests that parents' income is effective in the high level of heavy sexual activity among adolescents. These findings are consistent with research by Rosmani in Aceh, indicating that there is a relationship between the role of parents. Limited parental control over children might stem from hectic work schedules, leaving parents with few options for managing their kids' everyday activities [27].

This study revealed that the majority (64.4%) of students who use social media for negative purposes engage in high-risk sexual activity. This is in line with research from Anna which states that access to information media in younger samples has a large influence with the risk of risky sexual behavior in adolescent [28]. The use of social media depends on the purpose of use. Similar to another study, they claim that using social media or the internet is equivalent to cybersex, in addition to being a means of communication [29]. Students are at different risks of engaging in sexual activity depending on how they use and access social media information. An association between social media use and sexual behavior has been found in study results [30]. Teens are inextricably linked to their smartphones and social media accounts. Teenagers who fail to exercise caution in this regard risk having unfiltered access to all material on the internet and social media. In addition to a lot of false information that is posted online, one may access various material on the internet and social media, including information that could negatively affect its users [31]. Teenagers who are curious about sexuality or reproductive health will turn to mass media, particularly the internet, for information if they do not receive it from their parents or other closest relatives [31]. Since

the media and other triggering elements are becoming more widely available, this complicates the issue of dangerous sexual activity among teenagers [32]. According to a study, sexual behavior and information media exposure are significantly correlated [31]. Based on the study's findings, there is a value of (p-value 0.011) correlation between teenage sexual behavior and mass media. Teenagers in America now choose Facebook above other social media platforms as of 2012. Teenagers also often use Twitter, Instagram, and Snapchat as social media platforms. One of the things that exposes kids to pornography is this medium. Teens in romantic relationships are impacted by social media. When examining sexual media, most scholars concentrate on the detrimental impacts of the medium [13]. It's quite simple to access pornographic websites over the internet. You can use the internet anywhere [33].

Sexual consent is the main thing that must be fulfilled in a healthy relationship when having sexual intercourse. In this study, 64.2% of students carrying out heavy category sexual activities used sexual consent. These findings are consistent with three earlier studies that found that students communicate their consent for sexual activity through direct nonverbal behavior (e.g., touching, undressing, kissing, or "foreplay") and passive behavior (e.g., accepting their partner's efforts, saying no, and reciprocating their partner's actions) [34]–[36]. Regardless of the length or intensity of a person's relationship with another, obtaining consent is always the most important thing to remember before having sex. Consent must be freely given through unambiguous words and actions and cannot be assumed [11]. According to sexual consent theory, consent can only exist when a person expresses verbally that they are willing to have sex [37]. Because rape occurs on college campuses more frequently than in any other place, verbal permission is the sole acceptable form of consent [38]. Three concepts of consent have been identified: explicit agreement, "inferred" willingness, and internal "volition" [39]. When it comes to dating, students said that long-term or serious relationships tend to have less explicit permission before sexual activity [40]. To prevent conflict, women in committed relationships may also consent to have sex with their spouses [41]. College students who internalize norms that legitimize women's cooperation and passivity in sexual engagement may be less likely to refuse unwelcome sexual behavior [36].

Sexually transmitted infections are one of the many consequences of premarital sexual activity among adolescents. The rise of short relationships in today's teenagers creates a great opportunity for them to change partners. Continuing from the previous discussion, women's lack of empowerment to communicate and make decisions in sexual activity with their partners can also be one of the causes of the prevalence of unsafe sexual relationships. This study successfully identified adolescents with STI symptoms, which amounted to 37% of all respondents. However, the absence of physical symptoms should not be ignored, as most STIs found worldwide are often asymptomatic [42]. Based on the chances of cure, sexually transmitted diseases are divided into curable diseases and diseases that can be treated for severity. The curable sexually transmitted infections such as Chlamydia, Gonorrhea, and Syphilis are the most common, topping the list with an increase of 39%, 96%, and 167% over the last decade according to statistics in Canada [43]. Based on Irish surveillance data, there was an increase in the transmission of sexually transmitted cases in 2022 when compared to the pandemic which had decreased. This transmission is dominated by the age group under 25 years old [44]. Based on the results of research on safe sexual behavior with condom use conducted in men and adolescents aged 15-24 years in Indonesia, show low results with a percentage of 25-27.4% [45].

Having been in a romantic relationship provides the greatest explanatory power for both men and women among all the factors shown to be associated with college students' sexual activity. Numerous research studies have demonstrated that dating particularly committed love relationships is a significant predictor of sexual activity. Having a partner can make it more likely that you will partake in private, pre-relationship activities like fondling and kissing, which could lead to sex. Teenagers who have a boyfriend or girlfriend may also be introduced to a new social circle with more liberal sexual norms; research has indicated that sexually active teenagers are more likely to have supportive peer norms [46]. Hence, there is an increased demand for education regarding intimacy, sexual risk, and safety for young individuals in romantic relationships. The significance of focusing educational initiatives on young people in romantic relationships is shown by this study.

There are several limitations to this study. Firstly, the gender-imbalanced sampling made it impossible to draw a definitive picture of the connection between actual sexual activity and gender. Secondly, as the majority of respondents in this survey were concentrated in particular regions, the findings should not be applied to all Surabaya students. Finally, it is essential to consider the potential for bias resulting from underreporting. The researcher did not directly observe the physical condition of the respondents, so the data collected were statements from respondents. Instead, the measurement of sexual activity in this study is based on self-reporting and participant sensitivity, particularly in the aspect of symptoms of STDs.

4. CONCLUSION

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The results showed that among the factors identified for sexual activity among university students in Surabaya, dating status was the strongest factor triggering risky sexual activity among university students. Risky sexual activity will lead to the consequences of sexually transmitted infections. This study identified adolescents with STI symptoms in 37% of the respondents. Additionally, we showed the frequency of socioeconomic status, sexual consent, place of residence, and time spent on social media on sexual activity. To promote sex education for university students and raise knowledge of sexual dangers and safety, legislators and sex educators need this information to create workable and successful methods. In addition to offering a secure setting for students, college counselors should be able to provide reliable information on a wide range of sexual difficulties. For specialized information on safe sex, contraception, and sexual health, college counseling centers must offer pertinent, easily available information and resources along with helpful recommendations.

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